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Abstinence Preparation Group Intervention for dependent alcohol users. How does it work? Results of a process study.

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Abstract

There is evidence to suggest that repeated alcohol detoxifications have an adverse cognitive impact. The Abstinence Preparation Group Intervention (APG) is based on Cognitive Behaviour Therapy and is aiming to help people who developed dependence on alcohol to regain control over their drinking, initiate lifestyle changes and enhance self-efficacy. The current project aimed to explore the theoretical mechanism of APG; if self-efficacy, urges to drink, positive expectancies and negative expectancies from drinking are changing during therapy, if these changes are consistent with expectancy and social learning theory predictions and if are correlated with reduction of drinking.

Methods

Clients were assessed at baseline before starting APG (t0), immediately after completion of APG (t1) and at 1 month post detoxification from alcohol (t2).

Results

Thirty five participants were recruited. APG have reduced symptoms of dependence during the period of intervention and at follow up. Key concepts have changed significantly both during the intervention and at follow up, with the exception of negative expectances. All of the above changes were consistent with theory prediction.

Discussion

The findings improve our understanding of the important components of the Abstinence Preparation Group. This is the only intervention aiming to reduce the adverse cognitive impact of the alcohol detoxification.

Introduction

Tackling the impact of harmful and dependent drinking is a key public health priority in England. Alcohol misuse is linked directly to a range of health disorders, including high blood pressure, heart disease, stroke, liver disease, some cancers, and depression (England Public Health, 2013). There is also considerable evidence to suggest that changes in the central nervous system during the acute withdrawal phase (1-2 weeks after cessation of alcohol consumption) might be causally involved in the cognitive deficits subsequently suffered by people who are alcohol dependent (Georgiou et al, 2015; Ros-Simó et al, 2013). People with alcohol dependence, as they experience more detoxifications (medically assisted or not) and their alcohol dependence increases, show withdrawal-induced impairment in prefrontal subfields and inability to perform a task that captures two of the basic features of addictive behaviour – cue-induced motivation to seek a reward, and failure to inhibit such motivation when reward seeking is inappropriate. Furthermore, under emotional challenge, multiple detoxified alcohol dependent people show increase in integration of neural networks in sub-cortical regions, underlying a bottom up emotional input. These changes may confer inability in conflict resolution and increased sensitivity to stress, both of which may contribute to relapse (Duka et al 2004, 2011). In addition experimental data from laboratory animals demonstrates that withdrawal is an important factor in causing memory deficits after alcohol withdrawal, but not during alcohol intake (Lukoyanov et al., 1999; Farr et al., 2005).

In the light of this evidence suggesting an accumulation of adverse effects following repeated medically assisted detoxifications, it is crucial to maximise treatment effectiveness and to reduce the risk of adverse effects associated with the

detoxification process itself. It is possible that the long term course, and economic and social impact, of alcohol dependence is not only due to the natural process of the phenomenon but also associated with the existing treatment approach. The Abstinence Preparation Group intervention (APG) is the only reported intervention that puts emphasis on the preparation received by alcohol dependent clients before receiving medically assisted detoxification, in order to increase effectiveness of detoxification, reduce relapse rates, as well as to protect the brain from the cognitive side effects of the detoxification process itself. The intervention is based on Cognitive Behaviour Therapy. It is applied though while clients are drinking and aims firstly to stabilize the amount and pattern of drinking and secondly to empower clients to implement lifestyle changes required and necessary to maintain abstinence for a lifetime.

Offering APG is consistent with a shift from the existing treatment paradigm that considers medically assisted detoxification as the main treatment intervention for alcohol dependence, which reduces the negative impact of alcohol dependence on the individual and the society. The proposed new treatment paradigm acknowledges the evidence of the adverse effect that medically assisted detoxification might have on cognition (Duka et al 2004, 2011), the limited protective role of existing medication used in detoxification (Duka et al, 2011; Noel et al, 2001), and the limited participation of detoxified clients in relapse prevention interventions, which are proven to be the most effective interventions for sustainable long term abstinence (Kouimtsidis et al, 2012).

The Abstinence Preparation Group (APG) is based on Cognitive Behaviour Therapy (CBT) and is aiming to help drinkers to regain control over their drinking, reverse the automatized drinking behaviour, initiate lifestyle changes and enhance self-efficacy before they start medically assisted detoxification. It is an open rolling group, consisting of six sessions. The six sessions are numbered and offered in a given order but each session can act as an entry point. Each session has two facilitators and is divided into three parts (15, 30 and 15 minutes respectively). Part one includes group rules, introduction of new members, recap of the aims of treatment, review of practice allocated in previous session and individual targets set for the previous week. The second (main) part puts emphasis on the certain themes. In the third part, the group summarises the main learning points and agree practice and targets to be achieved before next session. Similarly to other CBT interventions, the APG focuses on the reduction of positive expectancies from drinking, development of negative expectancies from drinking, development of self-efficacy and coping skills with specific high risk situations and finally the development of overall lifestyle changes compatible with an abstinent way of living (Marlatt and Donovan, 2005; Monti et al., 1989). The fundamental characteristic of APG is that it is aiming to initiate those changes while people are drinking prior the detoxification as opposed to CBT based relapse prevention interventions, which have similar aims but they are offered after the detoxification. This is considered important because although relapse prevention interventions have been proven to be effective (Raistrick et al, 2006), empirical evidence suggests that less than 60% of clients completing a medically assisted detoxification, will attend aftercare interventions (Kouimtsidis et al, 2012).

This group intervention, was first implemented and evaluated in Hertfordshire in 2009 with the name “Preparation for Alcohol Detoxification” (PAD) (Kouimtsidis et al., 2012) and since 2013 is running in Surrey and with the current name “Abstinence Preparation Group” (Kouimtsidis et al, 2015). Previous evaluations indicated that APG is effective (Kouimtsidis et al, 2012; 2015) and acceptable by clients (Croxford et al, 2015). A very interesting observation of the evaluation of the first six months of APG implementation in Surrey, was that 51% of those attending the APG were able to reduce alcohol intake gradually and come off alcohol completely during the intervention, without the need for medically assisted detoxification (Kouimtsidis et al, 2015). When people present to the above alcohol community services, receive full assessment. Those who are dependent and willing to achieve abstinence are referred and start APG in the earliest possible opportunity. In addition they receive up to three individual key-working sessions. Just before the final APG session, clients have a medical review and the type of medically assisted detoxification is decided (community or inpatient). Major effort is made, so there is a very short waiting time between the end of APG and start of detoxification (maximum of 2 weeks).

The study reported here builds on earlier evaluations of the intervention and aims to explore the theoretical mechanism behind the effect of the APG; if the concepts of self-efficacy, urges to drink, positive expectancies and negative expectancies from drinking, which are considered to be the most important components of CBT, (i) are changing during the group therapy, (ii) if these changes are consistent with theory prediction and (iii) if these changes are correlated with reduction of drinking as expected (Morgenstern and Longabaugh, 2000). It is considered important not only

to prove that an intervention is working but to understand how it works. Such an understanding can inform further improvement of the intervention alongside clients' and service providers' experience and feedback (Liewelyn and Hardy, 2001).

Research Hypotheses

Treatment will lead to

(I) reduction of drinking and severity of dependence;

(II) urges will be reduced and will be positively correlated with the reduction of drinking and severity of dependence ;

(III) positive expectancies will be reduced and will be positively correlated with the reduction of drinking and severity of dependence;

(IV) negative expectancies will be increased and will be negatively correlated with the reduction of drinking and severity of dependence;

(V) self- efficacy will be increased; and will be negatively correlated with the reduction of drinking and severity of dependence.

Methods

Participants and setting

Participants were recruited from Windmill Drug and Alcohol community team in Surrey. This is the team that piloted APG and evaluated the first 6 months (Kouimtsidis et al, 2015). All clients presented to the service, assessed as alcohol dependent and were able to enter the APG, were invited by their keyworker to participate in the study. Participants were assessed at baseline just before starting APG (time 0), which is part of the standard clinical practice, immediately after completion of APG and before entering detoxification (time 1; 6-8 weeks since

baseline) and 1 month post completion of detoxification/withdrawal (time 2; 12-14 weeks since baseline). Participants received £5 incentive for each follow up assessments (which are additional to the standard clinical practice).

Measurement tools

1. Severity of Alcohol Dependence Questionnaire (SADQ) (Stockwell et al., 1983) with a score range of 0-60. The score is expected to reduce with treatment.
2. The Alcohol Urge Questionnaire (Bohn et al., 1995) to measure urges with score range of 8-56. The score is expected to reduce with treatment.
3. The Drug Taking Confidence Questionnaire (DTCQ-8) (Sklar and Turner, 1999) adapted for alcohol dependence (Kouimtsidis et al, 2014a) to measure self-efficacy with score range of 0-800. The score is expected to increase with treatment.
4. The Substance Use Beliefs Questionnaire (SUBQ) (Kouimtsidis et al, 2014a) to measure positive and negative expectancies. This is a 28 items questionnaire with 14 positive items (PosSUBQ), and 14 negative expectancies items (NegSUBQ), with good concurrent validity for both subscales, good discriminant and predictive validity for the negative expectancies subscale. PosSUBQ score is expected to reduce with treatment, whereas NegSUBQ score is expected to increase with treatment.

Analyses

Descriptive statistics are presented as means and standard deviations for continuous data and frequencies and percentages for categorical outcomes.

To assess for changes over time a linear mixed effects model with clinical outcome at baseline (time 0), post-treatment (time 1) and 1 months follow-up (time 2), was used. Time was included as a categorical fixed effect. To model the dependency of the repeated observations of the same subjects, we model the covariance between the residuals using an unstructured covariance pattern model which allows unequal variances and covariances (Brown and Prescott 2006). Model assumptions were assessed by visual inspection of the residuals.

Pearson's correlations were used to assess if change in SADQ from baseline to follow-up were associated with similar changes in the other clinical outcomes.

Results

Table 1 shows demographic characteristics of clients. The majority of clients were male (74.3%) and almost half lived alone (45.7%). The majority were unemployed (40%) or invalid/sick (17.1%).

Insert table 1 here

Table 2 presents means and standard deviations of the five clinical outcome variables at baseline, end of treatment and 1 month follow-up. Mixed effect model reveals that with the exception of NegSUBQ, clients scored significant better after

treatment and continued to improve at 1 months follow-up (Table 3). NegSUBQ were not significant different at end of treatment but clients scored significant better at 1 month follow-up compared to both baseline and end of treatment. Figure 1 to 5 shows the temporal changes of the 5 outcomes graphically, which all were as predicted. Including age and gender as covariates resulted in only marginal changes of the estimated changes and did not alter any conclusion. Both covariates were non-significant in all five models (all p's >0.1).

Insert Figures 1-5 here

There were significant correlations between changes in SADQ from baseline to 1 month follow-up and changes in AUQ (r=0.47, p=0.005, N=34) and DTCQ (r=-0.44, p=0.008, N=35) but not between SADQ with PosSUBQ (r=0.20, p=0.25, N=35), and NegSUBQ (r=0.08, p=0.67, N=33). Table 3 shows the results of the mixed effects model analyses. The reference category is baseline and end of treatment and 1 month follow-up are therefore compared against baseline. In addition we performed a pairwise comparison between follow-up at 1 month and end of treatment (Follow-up – End). Differences between time points with 95% confidence intervals are presented together with Wald z test and p values.

Insert tables 2 &3 here

Discussion

The reduction of SADQ score is an indication that APG is effective either alone or in combination with other factors that might have a beneficial effect during the period of preparation before the detoxification. The reduction of the SADQ score at the end of the group in particular, even before the detoxification has taken place, indicates that the stabilisation of drinking (main aim of APG) reduces the severity of dependence. In addition it indicates that APG might help clients to reduce their drinking during the intervention period. This was also shown in the evaluation of the first six months of the APG implementation in Surrey (Kouimtsidis et al, 2015), as 51% of those attending the APG were able to reduce gradually and come off alcohol completely during the intervention, without the need for medically assisted detoxification. The SADQ score has reduced further at 1 month following detoxification, indicating that clients who are completing either the gradual detox or the medically assisted one are able to maintain their abstinence for 1 month after the completion of detoxification.

The other measurements (AUQ, DTCQ, PosSUBQ) have also changed in expected the direction. This means that all the underlying theoretical concepts addressed by the intervention, such as urges, self-efficacy and positive expectancies from drinking have changed in the way predicted by the theory. The changes of AUQ and DTCQ were significantly correlated to the changes of the SADQ. These are indications that the APG intervention works as it is expected by the underlying CBT theory and the concepts targeted by the intervention are crucial and important for the intervention to be effective.

Only the negative expectancies from alcohol use (measured by the NegSUBQ) did not change in the direction predicted by theory during the period of intervention.

There was a non-significant reduction of NegSUBQ which is in the opposite direction of what expected. This change was reversed and NegSUBQ score has increased significantly during the period after the detoxification, as predicted by theory. It is important to note here that effect theory predictions on negative expectancies are not based on strong evidence, as the predictions for the other concepts .The concept of negative expectancies and their role into treatment has not been investigated as thoroughly as the concept of positive expectancies or self-efficacy (Kouimtsidis et al 2014b). There has been some evidence to suggest that their increase is crucial for treatment effectiveness and that together with increased self-efficacy (confidence) is the most important predictor of treatment outcome in smoking, alcohol, opioids and stimulants misuse (Kouimtsidis et al 2014 c). We don't' know though if this increase of negative expectancies, which is important in the maintenance of the behavioural changes, is a delayed effect of treatment, rather than a change required or necessary during the early stages of treatment.

A limitation of this study is the small number of participants. We have anticipated that we would be able to recruit 46 participants within the period of the study. The final sample of 35 has been proven though sufficient to proceed with the analysis.

In conclusion our findings suggest that APG is working according to the expectations and predictions of Cognitive Behaviour theory. These findings contribute to our improved understanding of the treatment components required during the structured preparation period prior alcohol detoxification. It is important to note, that to our knowledge, APG is the only psychological intervention reported in the literature, that aims to protect clients from the adverse cognitive effects of the detoxification itself by

reducing relapse rates and the need for repeated detoxifications, by stabilising the amount and pattern of drinking, promoting gradual change and enhancing self-efficacy through lifestyle changes required for sustainable abstinence.

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Table 1: Demographical descriptions of sample

		N	Mean (SD) or %
Age		33	45.15 (9.08)
Gender	Male	26	74.3
	Female	9	25.7
Living with	Alone	16	45.7
	Partner/Spouse	5	14.3
	Parents	4	11.4
	Self & Children	2	5.7
	Partner & Children	5	14.3
	Friends	1	2.9
	Other	2	5.7
	Total	35	
Occupation	Unemployed	14	40.0
	Employed	8	22.9
	Self-Employed	5	14.3
	Retired	2	5.7
	Invalidity/Sickness	6	17.1
	Total	35	

Table 2: Means and standard deviations of the five clinical outcomes at baseline, post-treatment and 1 months follow-up.

	Baseline		End of study		Follow-up	
	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)
SADQ	35	32.03 (12.76)	32	25.91 (13.69)	35	10.83 (10.37)
AUQ	34	37.06 (13.74)	33	26.33 (11.81)	35	11.09 (5.96)
DTC	35	250.29 (178.05)	34	399.41 (180.67)	35	745.71 (51.69)
PosSUBQ	35	47.14 (11.89)	35	35.83 (10.69)	35	19.11 (5.35)
NegSUBQ	33	42.52 (13.45)	34	39.15 (13.75)	35	51.91 (8.09)

Table 3: Results of the mixed effects model analyses.

Variable		B (95% C.I.)	z	p
AUQ				
	Baseline	0		
	End	-10.61 (-14.79 to -6.43)	-4.97	<0.0001
	Follow up	-25.97 (-31.49 to -20.44)	-9.21	<0.0001
	Constant	37.05		
	Follow-up - End	-15.36 (-19.87 to -10.84)	-6.67	<0.0001
DTC		B (95% C.I.)	z	p
	Baseline	0		
	End	148.25 (86.46 to 210.04)	4.7	<0.0001
	Follow up	483.18 (429.16 to 537.19)	17.53	<0.0001
	Constant	262.54		
	Follow-up - End	334.92 (285.29 to 384.56)	13.23	<0.0001
Neg SUBQ		B (95% C.I.)	z	p
	Baseline	0		
	End	-2.96 (-7.25 to 1.34)	-1.35	0.177
	Follow-up	9.96 (6.04 to 13.89)	4.97	<0.0001
	Constant	41.95		
	Follow-up - End	12.92 (8.55 to 17.29)	5.79	<0.0001
Pos SUBQ		B (95% C.I.)	z	p
	Baseline	0		
	End	-11.31 (-14.48 to -8.15)	-7	<0.0001
	Follow-up	-28.03 (-32.26 to -23.8)	-13	<0.0001
	Constant	47.14		
	Follow-up - End	-16.71 (-20.44 to -12.99)	-8.79	<0.0001
SADQ		B (95% C.I.)	z	p
	Baseline	0		
	End	-6.36 (-9.08 to -3.64)	-4.58	<0.0001
	Follow-up	-21.2 (-25.63 to -16.77)	-9.38	<0.0001
	Constant	32.03		
	Follow-up - End	-14.84 (-19.83 to -9.85)	-5.82	<0.0001

Figure 1: Temporal change of SADQ

Figure 2: Temporal change of AUQ

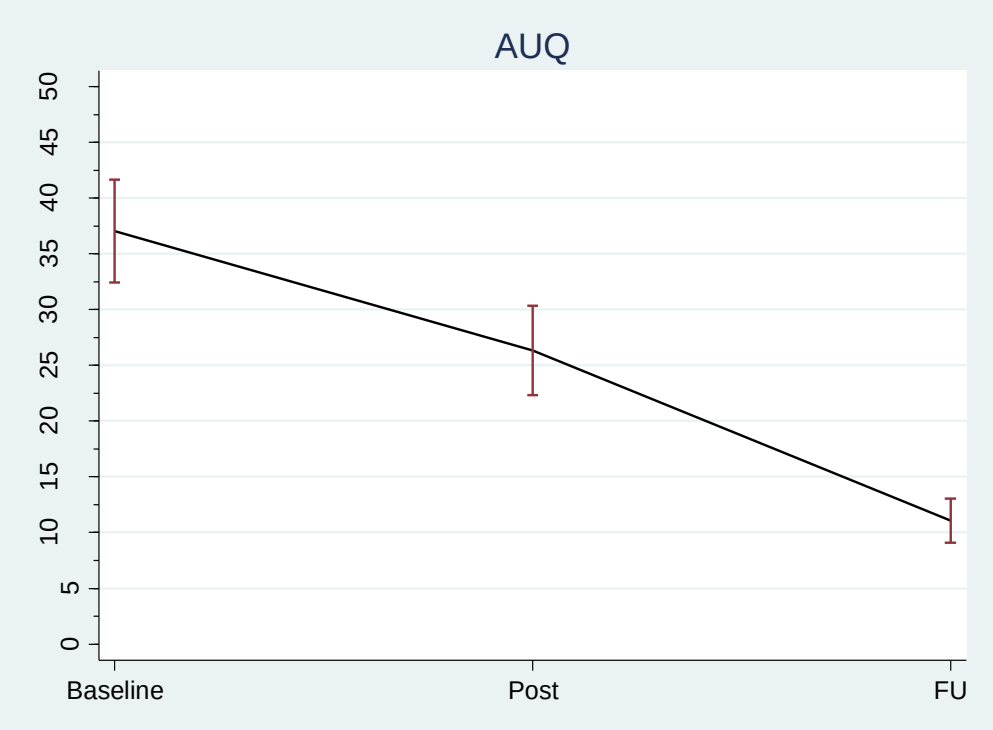

Figure 3: Temporal change of DTCQ

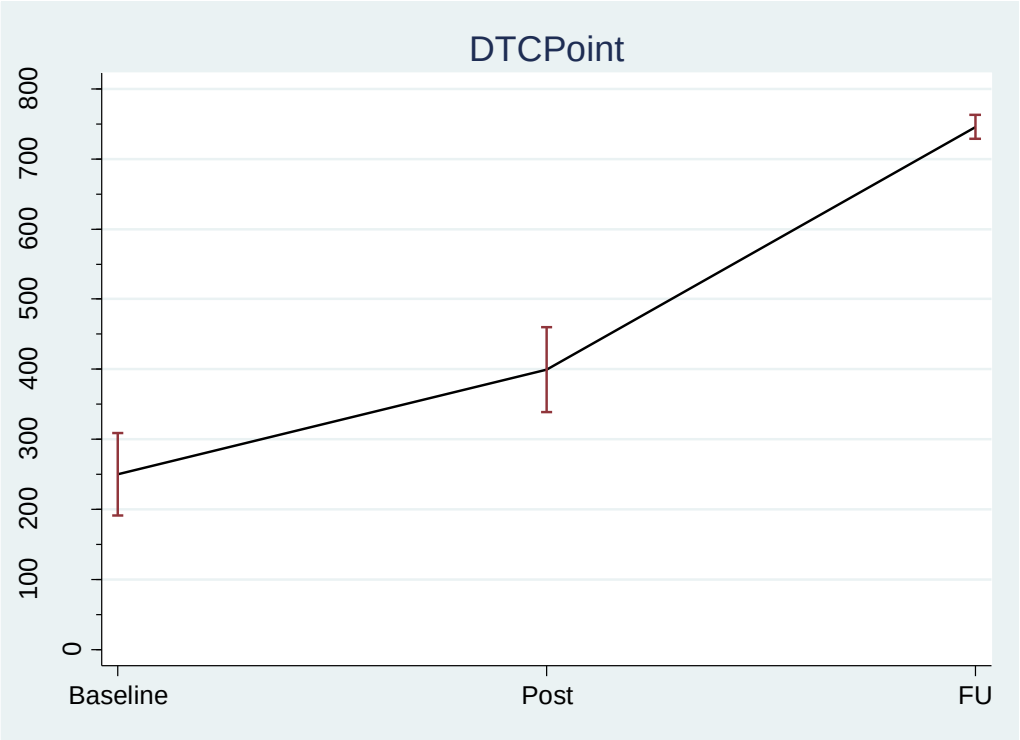

Figure 4: Temporal change of PosSUBQ

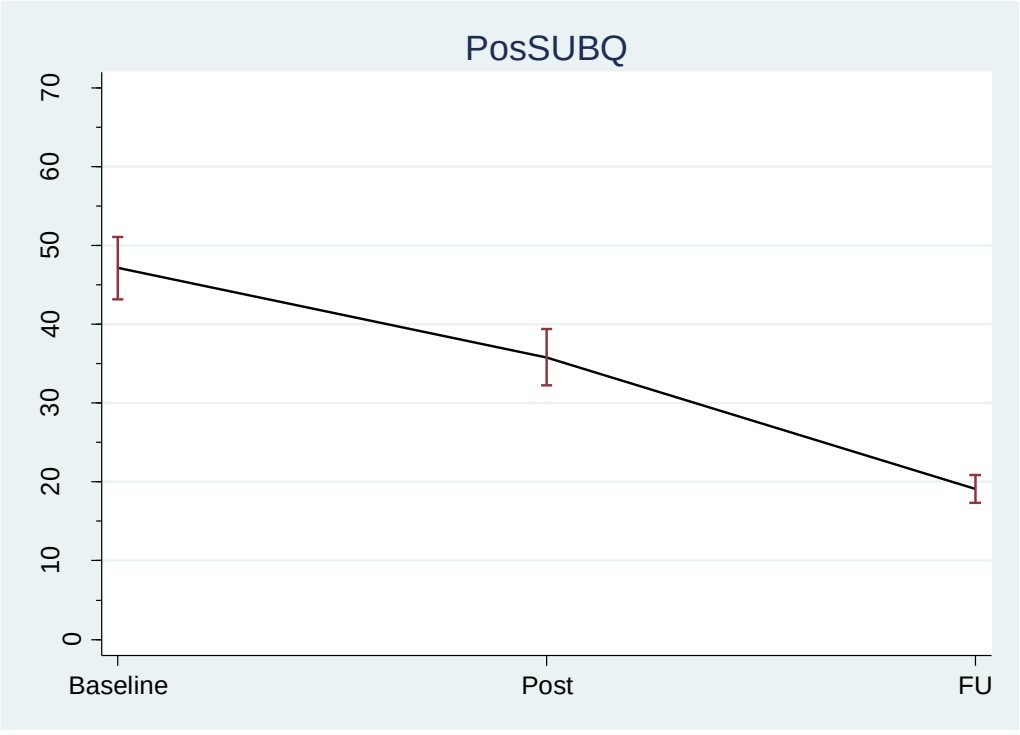

Figure 5: Temporal change of NegSUBQ